

INDIAN JOURNAL OF PSYCHOLOGY

On Gestalt Theory

BY

N. N. SENGUPTA

The development of the Gestalt theory is an event of great importance in the history of Psychology. Its value as a theory is being tested in the field of Animal Psychology no less than in that of Human Psychology. It rests its claim not only on the ground of its Philosophic coherence but also on the strength of its experimental procedure. It presents in addition a critique of recognised doctrines, principles and methods, which provokes thought and enquiry.

A peep into the history of Psychology during the last three quarters of a century gives us the *raison d'être* of the Gestalt theory, so that it ceases to appear as an exotic growth in the seemingly smooth tenor of psychological thought. The Psycho-physics of Weber and Fechner sought to discover a correlation between stimulus intensities and sensation intensities. A more general application of this method culminated in an analysis of all mental states into sensory elements and in a correlation of these elements with specific stimuli on the one hand and physiological processes on the other. Thus developed a common programme of work in the psychological laboratories. It consisted in (i) a control of the stimulus, (ii) an introspective study of the sensory processes and their associations, (iii) an attempt at an explanation of the data of introspection in terms of physiological factors. This plan

study still continues in most of the laboratories and finds strong support from the side of Structural Psychology.

Structural Psychology carries forward the tradition of Psycho-physics and tries to account for the concrete mental states as compounds of certain elementary processes. Its special point of difference from Psycho-physics lies in its attempt at discovering the laws, those of fusion, colligation, association, etc., that explain the combination of psychic elements into thoughts and perceptions, emotions and impulses. It places equal emphasis upon introspective observation, control of stimuli and the discovery of relevant physiological functions. But the consequence of this method is atomism on all sides; you have a number of psychic elements, a number of specific stimuli and a number of isolated anatomical structures and physiological functions. The picture of a unitary mind at work is nowhere to be found.

Protest against this kind of atomism is to be found in the works of many writers. William James' well known critique of the Mind-Stuff theory is an instance in point. "A higher state" he says, "is not a lot of lower states; it is *itself*. When however a lot of lower states have come together, or when certain brain conditions occur together which, *if they occurred separately*, would produce a lot of lower states, we have not for a moment pretended that a higher state may not emerge. But such emergence is that of a new psychic entity, and *in toto coelo* different from such an integration of the lower states as the mind-stuff theory affirms."¹ But even James acquiesced in atomism as evidenced by his accounts of will and emotion.

A second line of protest against atomism found expression in the standpoint known as functional which regards mind as a purposive and dynamic reality that seeks an adjustment within itself as also to external objects. Stout is the

¹ James — Principles of Psychology, Vol. I, p. 162.

best known representative of this view.¹ The difficulty of this line of thought lies in the fact that it grounds itself largely upon metaphysical and epistemological considerations. Its efforts lie in showing the consistency of known facts with theory, rather than in leading to the theory from facts.

Another opposition to psychological atomism finds expression in the works of James Ward² and Calkins who proceed upon the idea that the assumption of a unitary self is necessary for the explanation of mental phenomena. The failure of this school to produce a lasting impression upon the course of Psychology is due to the fact that it carries forward the tradition of metaphysics and is looked upon with suspicion by the laboratory psychologist, and that it rests its assumptions ultimately upon epistemological considerations rather than upon the observation of psychological phenomena.

A fourth solution of the difficulties of atomism is to be found in the group of workers who, for a better name, may be called 'Act Psychologists.'³ The best expression of this view is to be found in the writings of Brentano, Höfler and others who distinguish between the two phases of *Inhalt* and *Tätigkeit* or act and content.⁴ A multiplicity of contents, thus, find their unity in the act which is peculiarly subjective. The source of unity is to be found in the mental activity rather in the external conditions, and in the series of contents determined by them. The difficulties of this analysis are very great. The distinction between act and content is more epistemological than psychological; and the logical puzzle into which it leads is well-nigh insoluble.⁵

¹ Stout—*Analytic Psychology*, Vol. I, Bk. I, Ch. III, and Bk. II, Ch. X.

² Ward—*Psychological Principles*, p. 34 ff.

³ Titchener—*The Psychology of Act*; *Amer. Jl. of Psy.*, 1922.

⁴ Titchener—*Experimental Psychology of Thought Processes*, p. 44 ff.

⁵ Sen Gupta—'On the nature of immediate experience in the light of contemporary epistemological discussion' in *Sir Asutosh Silver Jubilee*, Vol. I, pp. 878-80.

Behaviourism of Watson and his followers is another way of meeting the problem of atomism. The task of Psychology is not to study the processes that reveal themselves in the questionable experience called introspection. Mental processes are admittedly fragmentary ; you cannot reconstruct the life-history of the organism with the materials yielded by self-observation. The object of interest in Psychology is the *organism at work*. We are concerned with the ways in which the organism adjusts itself to the variable environment. The units of psychological investigation, therefore, are movements and the organic changes that accompany them. Behaviourism of this type is an alternative to psychic atomism ; it leaves the problem of psychic life severely alone.

The Gestalt school presents a new programme of work. Its strength lies in the fact that it grounds itself mainly upon the data of experiments. Further, it does not attempt to apply a theory, independently arrived at, to a set of facts ; it develops its theories from the facts themselves. It is for these reasons that the Gestalt school has been able to command widespread interest in its doctrine and appreciation of its programme.

There are four phases in the development of the school. (1) The earliest phase opens with a paper of Ehrenfels on *Gestals qualität*. It is essentially an epistemological approach and lays down two fundamental properties of the Gestalt : (i) The Gestalt possesses properties other than those of parts and not derivable from the latter ; (ii) the Gestalt is transposable since it does not depend upon a given set of elements. (2) The second phase of the doctrine consists in its elaboration in the hands of Meinong, Witasek and Benussi who have been called binarists in a recent paper of Spearman. It is maintained that the contents of an experience are held together by a new process which is called *Akt* by Witasek and *Produktionsvorgang* by Benussi. The Gestalt *qualität*, according to this view, is essentially a subjective process. It

is superadded to sensations which are consequently prior realities. This position, however, is meaningless to the present exponents of the Gestalt theory.¹ (3) The third consists in the experiments of Wertheimer, and others on the perception of spatial and temporal configurations. It is maintained that these perceptions cannot be explained on atomistic and associational hypotheses and should be regarded as unitary wholes. (4) The present and the last stage consists in a wide application of the doctrine in the fields of genetic and comparative Psychology in the formulation of a connected programme of work and in general, in the growth of the theory into a new standpoint of Psychology.

The motive of psycho-physics as also of Structural Psychology is to demonstrate a connection between measurable stimuli and certain psychic processes. A perception for Psycho-physics is a series of certain sensation intensities that varies with certain stimulus intensities. A perception for Structural Psychology is made up of a number of sensations definitely related to a series of stimuli, but united according to certain laws, those of association, fusion etc., inherent in the nature of sensations. Sensations, however, are products of conceptual construction and not real features observed in the percept. The units into which a percept is analysed are therefore hypothetical in character. "A percept" for Gestalt Psychology, "is not a sum of independent elements, nor a mental combination of such, but primarily a unitary structure. Psychological analysis, far from revealing the constituents of the whole, breaks it up, destroys it, puts in its place something else, transforms one process into others."²

But there is one type of analysis, says Köhler³ "which is perfectly genuine, allowed and valid in all cases: the simple description of the field in terms of real units, sub-units

¹ Koffka—Psychical and Physical Structures. *Psyche*, July, 1924, p. 63.

² Koffka—Psychical and Physical Structures. *Psyche*, July, 1924, p. 81.

³ Köhler—An aspect of Gestalt Psychology in *Psychologies* of 1925, p. 178.

as their real parts, in terms of their boundaries, sub-boundaries etc.” The ‘formal properties of perception and action’ cannot be ‘derived from a knowledge of sensational units or part responses like reflexes.’¹ The Gestalt school insists, as Koffka says,² “that the whole, instead of being composed of their parts, really determine what parts are to be. They have their own laws of being by which they determine the kind of wholes that are stable, the kind that are prone to become transformed and the direction of such transformation.” In regard to the stimuli corresponding to such wholes it is urged that the external factors should be taken in their spatial, temporal and other relations. That is to say, instead of the simple stimulus of Psycho-physics, we should speak of a stimulus-situation or stimalus-whole. In regard to the physiological conditions, the Gestalt school maintains that local processes in the sense-organs or in the cortical centres cannot explain psychic wholes. For instance, the perception of movement cannot be explained in terms of after-sensations. The local and the brain processes must be structural wholes real in character. No part of the excitation reaches consciousness before the whole does. Thus, we are led to a conception not only of a psychic Gestalt, but also of a physical Gestalt and a physiological Gestalt.³

We should proceed a step further and speak of one Gestalt or total situation including the physical, the physiological and the psychological.⁴ There is no situation subjective per se. The subjective attitude is ordinarily believed to act upon the contents of consciousness organising and relating them. But in real life, the inner process and the outer conditions change correspondingly. “The chimpanzee behind the bars of his cage, seeing a banana beyond them too far away for his arm,

¹ Helson—The Psychology of the Gestalt A.J.P., 1925, October.

² Koffka—‘Introspection’ Brit. Jl. of Psy., Oct. 1924 also Psyche. p. 81. op. cit

³ Köhler—Psychologies of 1925, p. 190 also A.J.P., Oct. 1925.

⁴ Koffka—13, J.P., Oct. 1921 also Psyche, July, 1924, p. 84.

is, when healthy and not over-fed, immediately in a well defined subjective attitude; the banana there 'arouses his appetite'; that is, the relation between his inner conditions alluded to and the aspect of the fruit that makes the banana out-standing in the field, makes the functional value of it very alive and produces the corresponding stress towards the fruit, both things being sides of one and the same fact."¹ In the same way Koffka says that our optical organ sensory plus motor, is a self-regulating apparatus. "By operating upon the motor parts, the sensory event alters its own condition."² In other words, if we represent the psychical, the physiological and the physical by the term P_1 , P_2 and P_3 , the total situation is a Gestalt of P_1 , P_2 , P_3 in which one or the other may be outstanding and all of the constituents change correspondingly with one another.

The biological idea underlying the Gestalt theory is neither that of an active mind adjusting itself to a passive environment nor of a physical world impressing itself upon the passive psychophysical organism. In the continuous series of events that makes up the relation of the living organism to its environment, it is possible to distinguish relatively complete part processes or closed events. It is to these that the term unit Gestalt should apply. The physical, the physiological and the psychical constitute one chain of events in which different patterns, such as the physical or the psychical may be distinguished. Any change at one end of the series or in one part of the field brings in a corresponding change at another. The correspondence between psychophysical and physiological realities is a correspondence between phase and phase. Gestalt theory does not seem to favour the conception in which one set of facts is supposed to adjust itself to another.

¹ Köhler—An aspect of Gestalt Psychology in *Psychologies* of 1925, p. 193,

² Koffka—*The Growth of the Mind*, p. 80.

Such a view does not conform to the ordinary conception of the nature of physical and the psychical. "The simplest psychical contents discoverable by analysis of the facts of consciousness" says Wundt, "always presuppose, as their physiological substratum, complex nerve processes, the result of the co-operation of many elementary parts."¹ In the same way, unitary experiences as found in tonal fusion or spatial and temporal perceptions are correlated with complex physiological processes. These latter are often regarded as a number of single events relatively 'insulated' from one another. From the standpoint of the Gestalt, however, the physical and the psychical possess the same characteristics. Both are complex and both are structural wholes. Thus we can pass 'backwards and forwards from one to the other' and can ascribe similar properties to both. Köhler says, "the proposition that the physical and the psychical are absolutely unlike does not hold with respect to Gestalt properties. On the contrary every phenomenal field and the corresponding physiological conditions are maximally alike in regard to their structural properties."²

The Gestalt school introduces a new conception in Psycho-physiology, that of short circuiting. When a number of sensory nerves are stimulated at the same time, the inter-connecting cortical neurones bring about a 'short-circuit' of the excitation. This however, depends upon the temporal interval between the cortical regions stimulated. "If the neighbouring centres *a* and *b* are stimulated at a determinately short interval, there is a process of physiological short circuiting between *a* and *b*."³ The physical basis of perception consists in the stimulation of sensory nerves and the process of short circuiting.

¹ Wundt—Physiological Psychology Vol. I. p. 321.

² Köhler—The problem of Form in Perception. Proceedings of the International Congress of Psychology, 1923, p. 28.

³ Wertheimer—Experimentelle studien über das Sehen von Bewegung in Drei Abhandlungen Zur Gestalt Theorie, p. 88.

The phenomenon of 'closure' seems to be the correlate of the process of short circuiting. The organism faced with a set of stimuli passes through a 'transitional situation' which may vary in a number of ways, in order to reach an 'end-situation' with which the effect of stimulation 'closes'. 'Closure' in mental life implies the operation of an end as a determinant. Hence the Gestalt theory bears marks of kinship with the 'Mental activity' theory on the one hand and to 'Psycho-vitalism' on the other. But 'closure' is not solely a mental or 'vital' function inexplicable in terms of the laws of the material world. It possesses an adequate physical apparatus for its function. This feature distinguishes it from the purely 'spiritistic' theories.¹

It is equally evident that the Psycho-physics of the Gestalt school and that of Fechner are radically different. In the place of the relation between single stimuli and simple sensations, the Gestalt theory, as we have already seen, proposes a functional relation between a stimulus situation and a mental configuration. 'Functional analysis' consists in limiting the stimulus instead of changing the experience-datum. The task of the psychologist consists in observing and describing the changes in the mental configuration as dependent upon changes in the stimulus situation. The actual programme of work in the laboratory is to study the phenomenal character, a term which will be explained presently, of a field or content in relation to the pattern of a set of stimuli, especially space and time pattern.

The Gestalt school maintains that mental facts should be studied by means of 'phenomenological observation' and not by means of 'introspection.' If I describe an orange as a round fruit with orange colour, soft to touch, and sweet acid-taste, it is a phenomenological description. If I say that it is a visual colour experience along with an experience

¹ Koffka—The growth of the mind, pp. 104-106.

of round shape, sweet-acid taste and certain tactual impressions I am giving my introspection. In introspection, the attention is directed to subjective processes alone. The 'thing' character of the percept, its unity and objective reference, dissolve themselves in sensations and other elementary states. The consequence is that mental life appears as a concourse of psychic atoms. In 'Phenomenological observation' the attitude is objectward. The features or phases of the percept as an object whole, are studied by the subject of the experiment. Introspection yields hypothetical units in the shape of sensations, images and feelings. Phenomenological observation deals with real units, the observable characteristics of the object.

The object attitude, however, is the naïve attitude of our daily life. It is easier to observe and to describe the object than to analyse the inner experience. Phenomenological observation, therefore, requires no special training, whereas the introspective attitude can be developed only through practice. The method of psychological observation according to the Gestalt school, therefore, does not differ from the methods of observation in other sciences. Nor is there any need of limiting psychological investigations to observers trained to a particular method. Every one trained in scientific pursuits may participate in psychological experiments.

Again the Gestalt school insists that a new attitude is necessary for the discovery of psychological truths. The method of introspection is one of analysis. We can observe only 'aspects' and 'fragments' of experience, only parts rather than wholes in introspection. Introspective analysis yields sensations and images rather than perception as an integral process, kinaesthetic sensations and ideas of end and means rather than a total act of will. The Synthetic attitude on the other hand, is favourable for the observation of experiences in their wholeness. Illusions are better perceived when the

subject assumes a synthetic attitude. The perceived phases of an experience, again are related in meaning. To treat them analytically as in introspection, is to divorce them from their actual setting. "The wholes being real," says Koffka, "they are not open to analytic observation. If an observer is to grasp their nature, he must adopt a very different attitude, such as the attitude of the great Knower of men, the wise old doctor, the clever diplomatist or the intuitive poet."¹

The synthetic attitude in this sense seems to be the same as Professor Münsterberg's purposive attitude. Münsterberg, however, recognised a 'causal' attitude side by side with the purposive.² He saw more clearly than any one else that the consequence of the causal attitude was 'psychological atomism.' Yet, Psychology, as a science, he believed, must pursue the method of analysis. The purposive attitude was for him no less real. It appears as soon as we try to *understand* and *appreciate* rather than to *explain* mental facts. "We have no right" he says "to prefer one to the exclusion of other."³ The special feature of the Gestalt school seems to be to adopt the synthetic attitude as the only valid attitude in Psychology.

A brief reference to a few applications of the theory may not be out of place. The problem of movement-perception which has been studied by a long line of noted psychologists, has furnished rich materials for the Gestalt school. It has generally been assumed that the experience of movement can be analysed into simple sensory constituents, after-images, kinaesthesia from eye-movements, or some special kind of sensory process. Movement which is a dynamic unity is thus, resolved into a static plurality. Again the common sense view of movement-perception is that it is the perception of an object in successive positions. Movement-perception, thus is

¹ Koffka—B.J.P. Oct. 1924, p. 160-161.

² H. Münsterberg—Psychological atomism. Psychological Review, 1900, 7 pp. 1-17.

³ H. Münsterberg—Psychology, General and Applied, p. 11.

an experience of an object in special circumstances. The Gestalt school refuses to accept either of these solutions. The perception of movement is a dynamic process and cannot be explained as a concatenation of static factors. It is a unitary experience and cannot be resolved into more elementary states. Further, Wertheimer found that the perception of movement is not necessarily blended with the perception of the object. Movement as such apart from the object, designated by the term *pure phi*, can be clearly perceived under certain circumstances.¹ But even when the object moves, we perceive it at two places, at the beginning and at the end. Between these two limits we perceive movement. Physiological explanation of a dynamic process has hitherto presented certain difficulties. The stimulation of certain sensory centres which undoubtedly underlie the perception of movement can only give rise to sensations, in themselves immobile. Hence the older psychologists tried to explain such perceptions as fusion-products of sensations. Wertheimer urges that there is an actual shifting of energy between the centres stimulated.² It is vectorial in character possessing a starting point, a direction and an end. This dynamic physiological process is correlated with the dynamic psychological experience of movement.

The Gestalt school has directed its criticism to some of the important concepts and theories of modern psychology. Attention is one such concept. As an explanatory principle, attention is employed in a variety of ways. Whenever the psychic states do not correspond to the function of the stimulus, the deviations are attributed to the operation of attention. Again it is supposed that processes at first unobserved are rendered vivid through attention. The notion

¹ Wertheimer—Experiment. Stud. Über das Sehen von Bewegung in Drei Abhandlungen, pp. 62-63.

² *Op. cit.*, pp. 87-89.

of 'unnoticed sensations,' is thus introduced in psychology and is frequently employed to fill up the hiatus.

Attention, in traditional psychology, is thus, a principle of indefinite potentiality. Such a conception is not only in itself futile; it stands in the way of a more rigorous scientific determination. The attentional process consists in a certain arrangement of mental states as more vivid and less vivid. Vividness shifts from one content to another with every change in the direction attention. The Gestalt school maintains that the attentional state is a configuration, in which a 'figure' stands in relief upon a back ground. Each so-called change in the direction of attention is a new configuration. There is, thus, no necessity of conceiving attention as a special process or as an activity superadded to the contents of mind.

Still, the Gestalt school must recognise that some provision must be made for certain subjective processes which alter the character of mental contents. Attitudes, indubitably determine the character of memories and perception, and the course and connection of meanings. We have already noticed the effect of analytic and synthetic attitudes. Emotions and moods, again not only give rise to new mental patterns but are also experienced in themselves. They cannot thus, be explained away as mere arrangements of contents. Yet if you admit that there are subjective processes *per se* and that they alter the arrangement of mental states, 'functional analysis' ceases to be the sole method in psychology. Other factors, besides the stimulus situation, determined the character and tenor of mental life.

As a protest against atomism, the Gestalt school must necessarily deal with the problem of association. The concept association too, like that of attention, is vicariously employed. It serves to explain perception and imagination as well as thought and memory. As a theory of learning it simplifies the actual complexity of efforts by assuming that co-ordination

and grouping of movements and perceptions take place through chance. The atomistic view of association, therefore, must be replaced by a configurational theory in order that it may prove an adequate explanation of mental life. The Gestalt school restates the law of association in the following way: "If A,B,C. once or several times, have been present as members of a configuration and if one of them appears, bearing its membership character then the tendency is present for the whole structure to be completed more or less fully and vividly." Again, a configuration once present in consciousness creates a favourable condition for its own reappearance or of that of a similar configuration.¹ It is obvious that the law as restated, bears marked resemblance to that of Redintegration. Attention is directed to the associated whole rather than to its constituents which therefore, cease to figure as independent realities; and the loose conjunctive relation of individual experiences is replaced by a connection of meanings. This line of thought is not peculiar to the Gestalt school. The constructive theory of Wundt, and the critique of associationism in the writings of Ward and Stout have previously worked out the same point of view.

The Gestalt school holds that Psychology must be a science which should explain concrete experiences. The description that the school aims at is that of the object in terms of its observable features. Hence, if the features can be explained in terms of stimulus factors and if the unity of the object is assumed to start with, nothing is left unexplained. The difficulty of the structural school lies in its failure to explain the unity of the object. Other theories too, assume unifying factors, such as self, act, etc., of questionable validity. The difficulty is avoided in this instance in the assumption that the unity is given in experience and needs no explanation.

¹ Helson—Psychology of the Gestalt, A.J.P. July, 1925.

Another claim of the school is that it would open up real possibilities of *prediction*. The structural psychologist fails in this in as much as the principles according to which the psychic atoms or elements combine into wholes are not known. Thus, a concrete mental state cannot be accounted for even if the individual stimuli and their corresponding sensory processes are known. The Gestalt Psychology, since it aims at accounting for the actual and observable features of objects in terms of external stimuli, can assure a more exact prediction of phenomena. In this matter, it stands on the same plane as physical sciences.

The greatest contribution of the school, however, lies in the rich variety of data that it has brought into the field of psychology. New and interesting lines of experiment, original in conception and simple in execution have been devised in large numbers, so that the stock in trade of the laboratory psychologist has been vastly increased. They have not only thrown new light on old problems but have opened up entirely new fields of research. Equally vigorous is the critical polemic that the youthful school has brought to bear upon the classical doctrines. Here, too, the lucidity and the obviousness of the criticism disarms opposition that a new standpoint usually arouses. All feel that something is amiss and something needs revision in Psychology though every one may not follow the views of the Gestalt school. For this, if not for anything else, we should welcome this new school of thought in the form of Psychology.

Intelligence Tests for College Freshmen

BY

G. C. CHATTERJEE

The American Army Intelligence Examination held in 1917 was the first Group test of intelligence. Its success led to the popularisation of group tests, so that similar tests have come to be devised for all kinds of different groups both in America and elsewhere. Among the groups for which tests have been composed and to which tests are now regularly set is the group of College Freshmen who seek admission into some of the American Universities year after year. This paper describes briefly an attempt to set up a similar test for Indian students, and touches on some of the problems connected with the task.

The tests selected were set to 160 students soon after their admission to the First year Class of the Government College, Lahore. This group broadly speaking consists of a proportionate representation of the chief communities of the province based upon the matriculation results of the Punjab University, candidates obtaining less than Second Division marks in that examination being excluded.

(The first problem connected with the selection of tests for this group was that of language.) Group tests must of necessity be largely linguistic, and the question whether they are to be set in English or in the Vernacular of the examinee is therefore of considerable importance. I confess that we were not able to settle the question on any experimental basis. We were led to adopt the English medium largely through force of circumstances. The province has three recognised vernaculars, *viz.*, Urdu, Hindi, and Gurmukhi. The translation of the tests in all these vernaculars, the choice of vernaculars open to candidates, and the subsequent scoring of

answer papers in three languages, presented difficulties which could not be overcome. It was felt by a representative committee of experienced university examiners, and teachers of English that the tests could be set in sufficiently simple language to practically eliminate the possibility of error of judgment owing to the fact that candidates had to understand the problem set and to give their answers in the English language. Subsequent experience has entirely confirmed this opinion. It was clear from all the answers examined that not a single candidate had failed on account of linguistic difficulties, either to comprehend the problem set or to attempt a solution of the same. (Naturally in the selection of tests all these which require a familiarity with English idiom and usage outside the attainments of Indian Matriculates must be carefully excluded.) But if this is done, I am inclined to hazard the opinion, that English will provide the most successful language for such tests in India.

(The next problem was that of selection of the tests themselves.) The variety of tests available for the average age of 15 to which our group belonged is more limited than for lower ages. We were able however to place some twenty different tests which we considered of a likely nature before a committee of the staff appointed by the Principal for the purpose of selection. It was decided to choose ten different types which were finally to be set to the group. (In the absence of any single definition of general intelligence it was felt, that as much verity as possible should be included.) It was decided to set the tests selected to a small selected group of III year students, partly to determine the time to be allotted to each, and partly to see how the tests would work under actual experiment. This proved a very useful expedient as two of the tests included in the first selection had afterwards to be rejected because of defects discovered during this preliminary stage. One of the tests which thus proved a failure is the absurd story test so strongly recommended by Burt in his *Mental and*

Scholastic tests. It was discovered that in this test the candidates failed to grasp the instructions properly and adopted no uniform procedure in the elimination of absurdities, so that any estimation of their answer tends to become arbitrary. Thus if in the story statement B is absurd in relation to statement A, some candidates will cross out B as absurd, while others would out A. Further the story selected should be such that when the absurdities have been eliminated the residue should make a consistent and consecutive whole. But this condition is not fulfilled by any of the examples given by Burt nor was I able to invent a story myself which should satisfy this condition, without making the absurdities so obvious as to make their detection worthless as an estimate of intelligence. We had therefore reluctantly to abandon this test, for it has obvious merits, and to substitute in this place the detection of absurdities in sentences, which are free from the defects pointed out in the above.

The other test which this preliminary enquiry also proved to be defective is one in which a certain time of the clock is given and the candidate is asked to state what time the clock would show if the hands of the clock were reversed. The times originally given have to be specifically selected if a sensible answer is to be given. But even when this precaution is carried out, the answer contains a slight error the detection of which by the specially intelligent student deters him from giving the answer which would be accepted as correct.

As stated before the time interval allotted for each test was determined by setting the tests to a small selected group of the most intelligent students of the III year. The time taken by the first correct answer to each test, supplied to this group being fixed upon as the standard for that test. This procedure is confessedly arbitrary, but I could think of none other, and subsequent experience revealed its satisfactoriness. In fact I am inclined to think that liberal time should be allotted for each test, as the majority of them are such that

mere quickness of response is not in itself a favourable sign of intelligence.

For purposes of administering the tests the total group was divided into smaller groups of 12, each in charge of a member of the staff to whom detailed instructions had previously been given. Instructions for candidates were as far as possible made clear and distinct, and were given in writing on the first instruction sheet supplied, and when necessary, repeated along with each individual test. The proper instruction of supervisors is one of the utmost importance as the slightest error on the part of one, might make a whole test valueless.

I am afraid I have no time to dwell upon other difficulties connected with the selection, setting and scoring of tests. I must proceed to mention briefly some features of the results obtained from this test, and the time of enquiry which these have suggested.

The average score of the group in the total of the tests was found to be 57 per cent. whereas the Matriculation average of the same group was 61 per cent. The highest individual score in the Intelligence test was 93 per cent., whereas the highest individual Matriculation result was 81 per cent. The lowest individual Matriculation percentage was 38 whereas in the Intelligence test the lowest score obtained was 21 per cent.

Our results indicate the enormous variation in the individual's attainments as revealed by the Matriculation results and as estimated by the Intelligence Test score. Assuming that our test is a fairly accurate estimate of the intelligence of the individuals concerned, it is clear, that some other factor or factors were concerned in determining along with intelligence, their position in the Matriculation Examination. It does not need much penetration to guess that one other factor at any rate is the factor of memory. Consequently a memory test was prepared and set to the

same group. Five memory tests were set, but two of these proved to be so easy that over 90% candidates secured cent. per cent. marks. These tests had therefore to be eliminated from the final memory score. But even in the other tests the scoring was unusually high yielding on the whole group an average of 71%. I believe that this figure is far too high, and I intend later to devise a stiffer memory test. But even on the results obtained I venture to base a few conjectures.

The Matriculation Examination of the Punjab University has been condemned wholesale as defective, being a test only of cramming and not of intelligence. The results obtained by the method of enquiry we have pursued do not wholly bear out this contention. The Matriculation results of the group tested, show a correlation co-efficient of .58 with their intelligence score, which though not a very high figure is nevertheless significant.

Intelligence score when combined with memory in equal proportions yields a correlation co-efficient of .63 with Matriculation marks, showing that memory is certainly an additional factor which determines the Matriculation results. When intelligence and memory are combined in the proportion of 3 to 1 the correlation with the Matriculation results is still higher, *viz.*, .68 which confirms the inference that in the Matriculation Examination intelligence pays more than memory. But intelligence and memory are by no means the only factors on which the Matriculation result depends. What the other factors are can only be guessed, as most of them are not open to experimental investigation. One such factor undoubtedly is that of application or industry, and I know of no test by means of which it is possible to estimate the individual capacity for these. The results which I have summarised above, are admittedly conjectural, and do not finally adjudicate between the relative values of intelligence and memory in such an examination as the Matriculation of the Panjab University. I have given them prominence

solely because they indicate a method by which the examination standards of Indian Universities, may be subjected to a scientific criticism instead of the usual subjective and biassed criticism which is levelled against them both in academic and non-academic quarters.

The value of intelligence tests for College Freshmen and of the data thus obtained, appears to me of considerable importance. Apart from the type of enquiry of which it has been made the basis in this paper, they will provide the teacher with accurate knowledge of the intelligence of individual students which can be a more reliable basis for the division of large classes into sections, for the selection of candidates into groups for advanced and Honours Courses, and supply a criterion of the progress of individuals during their college career. I would suggest further that intelligence tests should form a part of any public examination by which candidates are selected for employment in the Public Services, and where the tests at present employed, are of a purely cultural character.

Short Descriptive List Of Tests Employed.

- I. Completion of Number Series.
 - II. Logical Reasoning or True or False Test.
 - III. Selecting the best answer.
 - IV. Rearrangement of Sentences.
 - V. Analogy in Words.
 - VI. Arithmetical Reasoning.
 - VII. Foreign Language Test.
 - VIII. Detection of Absurdities.
 - IX. Applying a Code.
 - X. Burt's Reasoning Test.
-

Sand Motor

BY

GIRINDRA SEKHAR BOSE

It is a well known fact that the rate of flow of sand through an aperture is constant and independent of the height of the sand column. This principle has been utilised here, for the first time, I believe, in driving motors for Psychological Experiments. In certain psychological experiments it is desirable that the motor should move with a slow and uniform speed without making any noise. Costly clock-work mechanisms are certainly efficient but a simple 'Sand Motor' would in many cases serve the purpose equally well and in a much more economical manner. The sand motor can be utilised for driving Kymographs when a very quick rate of revolution is not wanted, Exposure-apparatus, Ergograph and a number of other apparatus in a very efficient manner. Its great merit lies in its simplicity and absolute freedom from noise.

The mechanism consists of a long tube fixed on an upright and one end closed by a diaphragm with variable aperture. This tube is filled with sands and the aperture regulates the rate of flow of sand and therefore the speed of the drum. On the top of the sand layer is placed a cylindrical weight which fits loosely inside the tube. As the sand column descends the weight also descends within the tube. To the top of the string is attached a piece of string which passes over a

pulley or pulleys and has a smaller weight attached to the other end. The function of the smaller weight is to keep the free end of the string taut. The pulley is attached to the revolving drum. The descent of the weight turns the pulley and this makes the drum revolve. No governor or anything else is required to control the speed which is absolutely uniform.



Fig. 1.

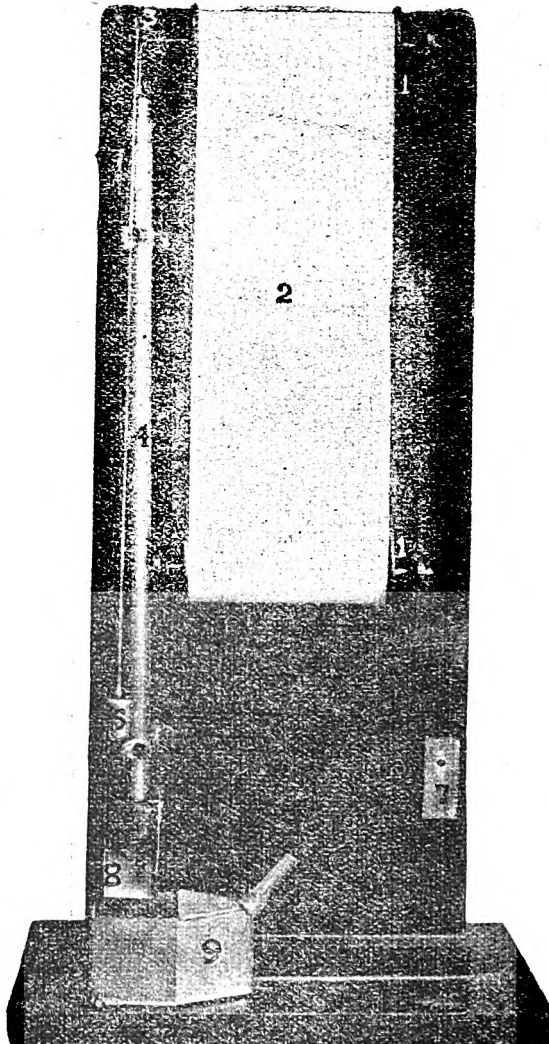


Fig. 2.

The diagram shows the sand motor working a memory apparatus of the type of Jastrow's. The original Jastrow apparatus is noisy and requires manipulation by hand. In the present apparatus the time exposure for each nonsense syllable and the interval between two exposures are absolutely constant and the working is automatic. Fig. 1 shows the view of the apparatus as seen by the subject. The exposure apertures may be varied by inserting different rectangular diaphragms. Fig. 2 shows the other side. (1, 1) indicate

the positions of the two wooden rollers mounted on pivots on the upright. The lower roller with its axle moves on groove which is not shown in the figure. This enables the tension of the paper (2) covering the drum to be adjusted. The nonsense syllables are written at equal distances apart on this paper. A piece of tracing cloth may be substituted for paper with advantage. (3) represents the pulley which is attached to the axle of the upper roller and over this pulley passes the string carrying the weight which is seen just protruding beyond the top of the tube (4) carrying the stand. In the apparatus there are two pulleys really, over which the string passes; one of them has not come out in the diagram. There is a side funnel attached to the tube just below the top. The inside weight is first pulled up by means of the string till it passes the opening of the funnel. Sand is then poured through the funnel from 'sand can' which also serves as a receptacle for the discharge of sand when placed at the base as shown in the figure. (6) is the smaller weight which keeps the string taut. There is a guiding wire stretched from the top of the apparatus to the bottom and passing through the ring attached to the weight. (6) prevents oscillation of the weight. The guiding wire is not shown in the diagram. (7) is one of the diaphragms which fits on the lower end of the tube. (8) is the slanting piece of metal which is hinged to the apparatus and serves to stop the flow of the sand when pushed up and to guide the discharge into the can when pushed down.

For efficient working of the apparatus sand should be previously sifted first through a sieve which would remove any extraneous matter of a size bigger than the sand particles and then again through another sieve which would retain the sand and allow the fine dust to pass through. The inside of the tube should be smooth and absolutely dry and the sand should be previously heated on a frying pan to remove moisture and organic impurities. The tension of the paper roll requires a little careful adjustment,

The Spirit of the Nations in Peace and War

BY

SUHRIT CHANDRA MITRA

In the last chapter of his book entitled "Die Nationen und ihre Philosophie"¹ Wundt has given us an interesting study of the characteristics of three of the big nations engaged in the last world conflagration. Though this is not the first attempt to differentiate and compare the psychological characteristics of the English, the French and the German, still the article before us has one unique feature in this that it studies the representatives of the above nations not only when they are peacefully carrying on the usual routine of their daily duties but also when they are furiously agitated and totally oblivious of all other considerations, are flinging at each other with the deadliest of weapons. Wundt had the melancholy opportunity of witnessing half the nations of the world engaged in one of the fiercest combats ever recorded in history. With the penetrating power of observation and the deep psychological insight that were native to him, Wundt lays bare before us the souls, as it were, of the nations concerned, and we are not less surprised at the subtle analysis of the literature and philosophy of the countries that form the subjects of his discourse than we are disillusioned of many of our cherished notions regarding the temperaments of those nations.

Many a distinctive trait of character and habit of thought escape unnoticed and many a superficial divergence from customary mode is exaggerated into fundamental differences by the casual observer travelling abroad in time of

¹ Wundt. *Die Nationen und ihre Philosophie*, published by Alfred Kroner, Stuttgart. 1921.

peace for the sake of gathering impressions. The fact is that in times of peace there springs up among the nations a certain form of public behaviour which gradually establishes itself as an international code of social conduct any deviation from which is then looked upon as an indication of lower mentality and feebler development. This explains the apparent uniformity in the social customs of the occidental nations. But just as in the case of an individual a powerful emotion gives a violent jerk to all that is 'repressed' in him in the interests of civilisation—to use psychoanalytical terms—which thereby eludes the censor and forcibly occupies the field of consciousness, so also is this cloak of apparent uniformity rent assunder by nations when seized with tempestuous passions revealing thereby the distinctive traits of their mentality in all their nakedness and in the clearest of outlines. And what powerful event is that which touches the deepest chords in the life of the nation and stirs its soul to its very foundation? It is War. It is this war which for the first time manifests the intense hatred which the belligerent powers bear towards one another and which in ordinary times they conceal under the conventional lies of diplomacy and the insincere exchange of courtesies.

Listen to the songs the soldiers sing when going out to the battle fields. "Le jour de gloire est arrivé" sings the Frenchman. Glory it is that he strives after, that he considers to be the highest possession on earth. Honour and Glory for himself! Honour and Glory for his country! Not the soldier alone marching to the front amidst horrid sounds and woeful scenes but even the little villager enshrined in the bosom of peace is roused to heights of passion unmeasurable whenever the tunes of the above song reaches his ears. Such tumultuous outbursts are never indulged in by the Englishman nor is he moved by considerations of winning honour and glory by competition. He feels himself to have risen above those competitions and on account of his unquestioned

Power and Sovereignty considers honour and glory to be his legitimate dues. He is supremely conscious of the immense power which his mastery over the seas gives him and sings therefore "Rule Britannia, rule the waves." Power and Sovereignty—that is what he always strives never to lose possession of. As contrasted with these what is it that the German sings? A very modest but intensely patriotic anthem urging every German to give his Fatherland the first consideration in everything, "Deutschland, Deutschland ueber alles." Another well known martial song of the Germans is the "Wacht am Rhein" which carries the refrain "Fest steht und treue die Wacht am Rhein." Firmness and Fidelity—or to express it in one word—Duty, that is the keynote of German character. That is what for him contains all that is best and noblest and for which he is ready at all times to sacrifice himself.

A close study of history, a critical examination of philosophy and minute observations of daily behaviours all confirm the impressions gathered from the considerations of the national anthems. Let it be remembered that in France was founded that time honoured institution of Knighthood where Honour and Glory were to be attained by distinguishing oneself before others. This spirit of competition is fostered by the Frenchman in every department of life, social and political, civil and military, academical and industrial. More prizes are announced by the Parisian Academy every year, says Wundt, than by all the other Academies of the world taken together. This trait of distinguishing oneself does not however confine itself merely to the individual. The nation too must be distinguished before all others. To such an unreasonable extent, however, is this feeling carried that the Frenchman considers himself to have suffered humiliation and his country to have lost its prestige whenever any other country wins honour and glory for itself even when that event has not got the slightest relation with him or his country.

"There cannot be the least doubt," says Wundt, "that it was not the candidature of the Catholic Hohenzollern, but 'Revenge for Sadowa' that brought about the war of 1870." Egoism, tinged with a certain glow of Idealism, forms the root of the French character. This is also strikingly illustrated by philosophers like Guyau and Helvetius who find in personal pleasure the one sole incentive to all actions even to the noblest of the altruistic ones.

Would any one who observes the often silent passionless Englishman in his daily life suspect that he also strives in his heart of hearts after Power and Sovereignty? Their literature depicts always peaceful lives of citizens; their philosophy is ever an attempt to reconcile the claims of thought with the practical necessities of a comfortable life. Indeed he seems to be all for peace. But look at him when this comfort is disturbed. Out comes then the sleeping Briton in him. Then are there angry outbursts in peoples' gathering and labourers' meetings. Then are to be heard insulting epithets hurled at the opponents in Parliamentary Assemblies.

It must be remembered that England did not always occupy the position which she now does; There was once a time of restless activity when a Walter Raleigh and a Drake were travelling over the seas and establishing England's claim on it with the help of their pirate ships. That spirit still abides in the breast of the Englishman but it is dormant. Times have changed and England now is the undeniable master of the seas. This has opened to the Englishman the gates of all lands on the face of the earth and has brought to him the world supremacy in commerce. His is now the richest of all the nations, thinks Wundt, and he has become the banker of the world. His people must be "the chosen people of God" as Providence has left nothing further to be coveted by him. Hence it is that he comes to think of himself as God appointed "Trustees"

of great kingdoms and little states. He is thoroughly satisfied and does not disturb himself on any account so long as his right of enjoyment is not affected. In Society the Englishman speaks only of trifles for otherwise he might be involved in discussions affecting thereby the peaceful enjoyment of his own personal beliefs and convictions. That he is free to vote in parliamentary elections gives him a sense of freedom and power, and that he belongs to a club of which Lord X is a member heightens him in his own estimation. When the Englishman travels abroad, as he often does, he never cares to understand the life and the spirit of the people he visits and hardly does he ever give himself the trouble of learning their language.

Putting all these characteristics together we may perhaps again use the term "Egoistic" to indicate English mentality. A difference has, however, to be made clear between the egoism of the Frenchman and that of the Englishman. The former is, so to say, 'centrifugal'—'I' am the centre from which flows the feeling outwards, to the family, to the native town, to the whole nation—whereas the latter is 'centripetal'. The English sayings "My home is my castle" and "My country is my world" beatifully illustrate the point.

English philosophy accurately reflects the English mind. "Let everybody do what is good for him so will the common good be best advanced," is the motto of the English moral philosophy. It is the philosophy of the satiated, it is egoistic Utilitarianism. From this however it has proceeded since the importation of the word Altruism, to Utilitarian Egoism. It has become altruistic but the basis of it is still the ego, as is evidenced by Spencer who speaks of 'Man versus the State.'

After all this what should one say of the Germans, the youngest of all the bigger nations of the world. It is still a mystery to many how within so short a time the ever jealous little German States, continually fighting with one another,

have developed this wonderful national consciousness. That explains the prevalence of so many misconceptions regarding them. Despotism and Militarism, these are the two words used by the United States politicians to denote the characteristics of the German nation. It only needs a few days' stay in Germany to convince oneself of the utter hollowness of the charges conveyed in those two words and to realise that few nations of the world enjoy such unlimited liberty as the German does. Wundt, as he was writing this article in 1915 was sanguine of the ultimate success of his nation. He refrained from dwelling at length on the praiseworthy sides of the German character. Idealism, he said, forms the fundamental note of the German temperament. This will be sufficiently manifest to anyone who cares to study the literature, history and philosophy of the country. He however gravely warned his countrymen of a serious defect in their character, *viz.*, their over eagerness to assimilate the culture of the foreign nation and to disown their own whenever they happen to settle abroad. This does great disservice to his nation however highly it may speak of their capacity for what the Aestheticians describe as "Einfühlung."

It is not necessary to agree to all that Wundt has said but nevertheless we consider it highly desirable that the article gets wide circulation so that others may compare their own notions and modify them where necessary in the light of the frankly expressed views of the eminent psychologist.

Notes and Abstracts

The World of Dreams—by Havelock Ellis.

Constable and Co., Ltd., pp. 288, Price 6s.

The little book first published in 1911 is already in its fourth edition. As Dr. Ellis states in his preface, the book belongs to the introspective group of dream studies and may be taken as the product of observations which he has carried out over a period of twenty years. Dr. Ellis holds that an understanding of dreams would furnish us with clues to the whole of life. Even to the uncompromising psychoanalyst this book should make a strong appeal, especially the chapter on "Symbolism in dreams" in which Dr. Ellis examines minutely and with the most commendable care, Freud's theory of dreams. Dr. Ellis believes that Freud is the most daring and original psychologist in the field of Psychopathology. He agrees with Freud that the fundamental problem of dream-imagery is largely a matter of symbolism. Where Dr. Ellis parts company with Freud is at the point where the latter's theory postulates that "we only dream of things that are worth dreaming about." Dr. Ellis maintains that to make all dreams fit into this one formula, is to make far too large a demand. The book is provided with an admirable index.

The Fighting Instinct—by Pierre Bovet.

Authorised English Translation—by J. Y. T. Grieg.

Publishers, George Allan & Unwin Ltd., pp. 252.

The Institute has four departments of activity: to train teachers, inspectors of schools, and directors and secretaries of education; to conduct educational research; to provide a bureau of information on educational matters; and to spread

the gospel of education among the general public. Education, understood in the widest sense, is continually face to face with pugnacious impulses. The fighting instinct is nothing but the form in which the individual asserts in a primitive fashion his will to live and to propagate his kind. No form of social morality can afford to leave this tendency on one side. The book owes its origin to a desire of the author, (a desire surely shared with him by thinking men and women the world-over), to get an adequate explanation of the causes which led to the outbreak of the World War. It begins with an analysis of the fighting instinct in the child, taking for its starting point a large number of extracts from narratives written by school boys describing tussles in which they or their acquaintances were involved. Next follows a study of the evolution of the fighting instinct and the alterations made in it by the pressure of social requirements. The book concludes with some reflections on the practical conclusions educationists may draw from such a collection of facts. There is a penetrating study of the relation between the warlike instinct and the religious life, points in the discussion being illustrated by citations from the life histories of Ignatius Loyala, William Penn and General Booth.

As might be expected in a work the author of which is a Swiss, the subject of military education is dealt with from the standpoint of the citizen-soldier. Prominence is given to the writings of Wyneken, the well-known German pacifist who maintained that, "every individual who acquires the soldier's mind in his youth is a warrior lost for the struggles of the spirit." In view of the inaptitude of the military spirit engendered by the war to fight the new adversaries produced by the "peace," namely, cowardice and greed, there are probably few persons at the present time who would hesitate to agree with Herr Wyneken. The author holds that the pacifist ideal comes naturally into the programme of the social development of mankind. Its realisation implies a double progress

of the individual and society, and so includes a double programme of education ; on the one hand, a programme of political education rendering effective the control of the anti-social tendencies of the governing classes by the democratic masses ; on the other hand, a programme of integral moral education, encouraging the alterations of dangerous forms of the fighting instinct into tendencies that shall be inoffensive. The translation into English has been carried out admirably by J. Y. T. Grieg of the Armstrong College, Newcastle-on-Tyne who has embellished the work with many extremely interesting footnotes of his own. There is a full and well-selected bibliography. It is a pity that the binder interpolated accidentally two pages and advertisements between page 246 and page 247.

Aphasia and Kindred Disorders of Speech—by *Henry Head, F. R. S., etc.*

Macmillan & Co., Ltd., Price 63/- in two volumes.

Although this treatise is intended primarily for the scientific world, there is much reading in it which will fascinate any ordinarily intelligent man or woman. The author is one of the most distinguished neurologists of the day and what he has given to the public in these two volumes represents the fruit of a study which has lasted over forty years. As Dr. Head observes in his preface, aphasia has attracted the attention of almost countless anatomists, physiologists and psychologists during the last century and a quarter. In spite of this we still stand dazed by the intricacies of some of its problems. With typical modesty Dr. Head is pleased to regard his own contribution to the subject as nothing more than “an attempt to blaze a track through the jungle.” American readers will probably pronounce it to be “some track”. As might only be expected from an old pupil and personal friend of the

greatest of all English neurologists, Hughlings Jackson, Dr. Head emphasises the immense light his old master throws upon this profound problem of neurology. Nowhere has the medical profession yet begun to realise the prodigious genius of this queer shy man who, so anxious not to overstate his case, would pepper almost every page of his writings on aphasia with explanatory phrases and foot-notes that the generalisation could scarcely be distinguished from the qualification. No wonder perhaps, that the English student, accustomed to the fluent facility of Jackson's contemporaries, turned away from the bristling difficulties of his style. That the Great War made possible for us to advance our knowledge of aphasia by providing nearly every combatant nation with a huge supply of injured brains, is hardly a compensation for the horrors which befell during those years, but the knowledge that we have increased, even at such a cost, our understanding of a terribly distressing affliction, is something to good.

*Crime and Custom in savage Society—by Bronislaw
Malinowski.*

*Messrs. Kegan Paul, Trench, Trubner & Co., Ltd.,
pp. 129 Price 5/-.*

As the author observes, anthropology is still to most laymen mainly an object of antiquarian interest. This attitude has led to the neglect of certain aspects of anthropology which are of a genuine scientific character. Of these, one is the subject of primitive law, and it is to this that Dr. Malinowski has devoted his talent and wide experience in the work under review.

The author considers that primitive jurisprudence has received in recent times the scantiest and least satisfactory treatment although half a century ago there was a positive epidemic of research into primitive law, especially in

Germany. The early German students of savage law were one and all committed to the hypothesis of "Primitive promiscuity" and "group marriage," just as their British contemporary, Sir Henry Maine, was handicapped by his too narrow adhesion to the patriarchal scheme. Underlying all these ideas was the assumption that in primitive societies the individual is completely dominated by the group; that he obeys the commands of his community, its traditions, its public opinion, its decrees, with a slavish, fascinated, passive obedience. This assumption, which gives the leading tone to certain modern discussions upon the mentality, and sociality of savages, still survives in the French school of Durkheim, in most American and German works and in some English writings.

He studied the natives of the Trebriand Archipelago, a Melanesian community. His observations go to prove that there does most emphatically exist among savages certain social arrangements and psychological motives adequate to enforce obedience to a certain class of custom for purely social reasons. Further, it is entirely wrong or only partially true, to regard (as, for instance, does Mr. Hartland) the main elements of savage jurisprudence to be religious sanctions, supernatural penalties, group responsibility, taboo and magic. Dr. Malinowski makes his criticism very conclusive by describing several actual cases in which he shows in what the compulsory nature of primitive legal rules consists. Perhaps the most interesting discussion from an anthropological standpoint, is that which deals with the conflict between the customs founded on Mother-right (matrilineal descent) and the paternal principle, and how this has given rise to a whole series of compromise formations, such as cross-marriages, types of inheritance and economic transactions, the typical constellation of father, son and maternal uncle, and certain features of the clan system. Although the author has a great deal to tell of the law of Mother-right, he ignores altogether any consideration of the factors which have been adduced to

account for the origin of this remarkable institution. The same remark applies to the treatment of totemism and taboo. This is a pity as it is not at all unlikely that by a full consideration of the psychology of Mother-right, the author might have been able to throw more light than he has done on the problem of the origin of these very "compromise-formations" between Mother-right and Father-love by which he is so evidently deeply intrigued.

OWEN BERKELEY HILL.

The American Journal of Psychology.

Vol. XXXVIII. No. 1. January, 1927.

*The Function of Clothing and of Bodily Adornment—by
Herbert C. Sanborn.*

The growing shortness of the modern woman's dress in Europe and America has been a subject of much criticism. To the lay man, the ruling fashions indicate certain growing depravities chief among them being lack of modesty. It is assumed that dress and modesty stand in one to one correspondence. In order to discuss how far this assumption is justifiable, Sanborn surveys the vast materials gathered by the anthropologists like Westermarck, Hirn, Grosse, Schutz, Ratzel, Wundt and others and finds that at the beginning the purpose of dress was to distinguish the wearer and to enhance his self-feeling; other factors, such as natural shame, need for protection, etc., have later made it a necessity of life. As ethical and aesthetic ideals developed, variations began to occur in the modes of covering the body, till man's dress became eminently suited for practical life and woman's became ornamental. The writer suggests that the experiences of the war, development of Feminism, and Industrial rivalry of the sexes, and the fact of woman's emancipation have brought about a further evolution in

woman's dress which at the present time is certainly very business-like and permits greater freedom of bodily movement than ever before. These are, however, mere suggestions which every one even a non-psychologist has a right to make and in fact actually does make. We feel that the problem has not been directly attacked and perhaps the time has not yet arrived when the question can be freely discussed from a detached scientific point of view.

The Psychological Approach to Esthetics—by Charles E. Whitmore.

After emphasising the concepts of Value and Tension in Esthetics, Whitmore finds that in the ideal scheme of general esthetic situation there are three factors, an artist, a work of art and a recipient. Contrary to the opinion of the French writer who produced 'a new esthetic based on the psychology of genius,' Whitmore urges that the artist has no feelings absolutely peculiar to him. The recipient must be ready to comply, within limits, with the artist's legitimate demands and must possess freshness in the power to respond. This scheme of triad, Whitmore says, is "a development from the original natural situation;" and he holds also "that it is a continuous development." He concludes that Psychology can explain at best two-thirds of the esthetic situation by formulating the requirements of the artist and the recipient; it cannot explain the whole.

An Experimental Study of Fatigue in the Auditory Mechanism—by Frank A. Pattie, Jr.

Such experimental studies on auditory fatigue as Pattie here reports have been rare in the past and the method that he has adopted is entirely novel. The chief point of the method is "comparison of the intensities of a tone of constant energy and frequency when heard (1) by a normal ear, and (2) by the same ear after being subjected to prolonged stimulation."

The results of the experiments which were carried on with an audio-frequency oscillator with a range extending from 440-4500 cycles per second, have enabled Pattie to measure the degree and the duration of Fatigue, and to show its dependence on the energy and duration of the stimulus.

An experimental Study of the Differentiation of Temperaments on a basis of Rate and Strength—by Mildred Frances Baxter.

Bahnsen, Wundt, Ribéry have suggested that the 25 century old four-humor doctrine really rests on a classification of men into Quick-Strong, Quick-Weak, Slow-Strong and Slow-Weak types. By quickness is of course meant the time required for the performance of a task and by strength Baxter means "that element in efficiency which remains when the speed or rate factor in a performance is disregarded; i.e., quality or excellence."

By numerous experiments extending over a long period of time, Baxter finds that although there is a slight indication of the possibility of a common rate or common strength factor, these factors do not seem to be related to temperament.

The Upper Limit of Auditory Localisation—H. M. Halverson.

The precise object of the experiment was to find out "the maximal amount of lateral movement which is obtainable from each of a number of tones varying in frequency from 600 d. v. to 1700 d. v." After giving a brief history of the problem Halverson describes his own experiments which show that "for frequencies above 3000 d. v. lateral localisation effects are observable, but median localisation, if not impossible, is extremely difficult to achieve."

Besides book reviews and some minor articles the volume contains descriptions, with illustrating diagrams, of some new Laboratory and demonstrational apparatus.

S. C. MITRA.

The Journal of Experimental Psychology Vol. IX. No. 2.

*The factor of speed in intelligence—by Helen
Peak & E. G. Boring.*

By an analysis of the "All or none" tests the authors show that the factor of speed is very important in these tests. Proceeding to determine the various causes which are responsible for the waste of time, they find that slowness in appearance of the constituents of the act is among others one main item, and that this may ultimately be proved to be due to differences in the rate of nerve conduction in different individuals. The result of the experiment which was performed on five subjects of the Harvard University with the forms 5 and 6 of the Army Alpha Examination and forms A and B of the Higher Examination of the Otis Self-Administering Tests of Mental Ability, showed that 'slow but accurate' subject had no advantage over his more rapid rival. It was also shown that a correlation really existed between the score in an intelligence test, the speed in intelligence test and the speed in reaction. This seems to support the above hypothesis of the authors.

*Further observation in the speed of retinal impression—by
Percy W. Cobb.*

This work is only a continuation of the earlier experiment on the threshold of the exposure-time and its relation to the brightness of visual objects. A larger group of subjects were experimented upon and variations were introduced in times of exposure, in contrasting effects, in the size of the objects, etc. It was found that the effect of changing the value of contrast from higher to lower was about equal to the effect of reducing the size of the high contrast test objects; and it was also noted that identical increase in speed could be brought about only with the help of a relatively larger increase in brightness.

The ability of Chinese students to read in vertical and horizontal direction—by L. K. Chen and H. A. Carr.

This experiment was performed in the University of Chicago, on some Chinese students, formed in groups of approximately equal number of individuals. The tests given were:—Reading Chinese, Cancelling Chinese, Cancelling English and Cancelling numerals. All of these were mimeographed both in vertical and horizontal fashion. Though difficult, tests given were made approximately of the same length and degree of difficulty. Time required for reading the presentations was noted as well as the time and score of the oral reproduction. Those subjects who are less trained in English showed better records with horizontal arrangement of English tests and Arabic numerals but with vertical arrangement of Chinese presentations. So it was found in conclusion that the subjects who had their maximum training in English gave more accurate results in horizontal arrangement of all the tests than those who were less trained in English. Although the constitutional condition of the Chinese eye enables them to apprehend more easily and readily the materials arranged in vertical fashion, yet habit and training as shown in this experiment, may considerably influence the original tendency.

The visual estimation of angles—by Marjory Bater Pratt.

It was found from the results of experiment that both the acute angles and the obtuse angles were liable to be under-estimated as well as over-estimated. But it was shown that those who had a tendency to over-estimation did it in the cases of both acute angles and obtuse angles. Similar was the result in the cases of under-estimation, too. From the results of the experiments which he conducted the writer concludes that the size of an angle is usually judged not by directly estimating the amount of space between the two arms but by the position of its arms with respect to some imaginary lines.

*An apparatus for measuring reaction time without a
chronoscope—by David Wechsler.*

This paper gives the description of an apparatus devised by the writer and the method of using it. It can measure the alertness of attention and speed of reaction with simultaneous or successive presentation of stimuli for 10 to 300 sigma of duration. But it fails to register the amount of incorrect reaction or the total failure on the part of the subject.

The next three articles give description of three apparatus devised by C. F. Ferree and G. Rand, Raymond Dodge, and H. B. Crosland. There is one other learned paper by Helen L. Koch and Jennette Ufkess on the comparative study of stylus maze learning by the blind and the normal subjects.

S. SINHA.

Journal of Experimental Psychology. Vol. X. No. 1.

*Coloured After-images from Unperceived Chromatic
Stimulation—*

by S. M. Newhall and Raymond Dodge.

The 'all-or-nothing' law of neural response seems to have no definite say in the matter of production of negative after-images consequent to subliminal coloured stimulation. The work taken up by the writers in his paper is calculated to throw light on the general problem regarding "mental inhibition in terms of re-farctory phase" and on the particular question of testing how far the adaptation of the visual system to an imperceptible chromatic stimulus favours the growth of after-images.

The contrivance devised for the experiment meets all the requirements of technical details. The data obtained show that the lack of colour perception due to adaptation (whose conditions have been properly ensured) does not hinder the appearance of the negative after-images.

The Influence of Primacy—by E. L. Thorndike.

The validity of the doctrine that 'other things being equal the association first formed between a situation and the response is stronger than any subsequent association' is put to elaborate experimental tests. The results tend to turn down the popular doctrine. "Primacy in and of itself", the author finds, "has zero potency." He contends that the general laws of learning—laws of 'use' or 'frequency'—need no supplementation, and explains the so called importance of primacy of a connection as being due not to its primacy as such but on account of the strength. The relative strength of the connections results from "an allied effect of frequency caused by position and is allied to the fact of diminishing returns and overlearning."

*The Relation of Retention by the Distribution of Relearning—
by Loh-Seng-Tsai.*

The study aims at removing the want of experimental support to the inference that the distribution of relearning should conform to Ebbinghaus' formula of negative acceleration in associative retention. Three series of experiments have been performed (1) to test the applicability of Ebbinghaus' curve to the retention of advertising materials, (2) to compare the relative efficiency of three various modes of

distribution of repetitions and of (3) different modes of distribution of learning. The experimental data yield a retention curve which shows the negatively accelerated characteristic type. The results of learning and relearning show maximal efficiency when a gradual increase in the length of time interval is preceded by frequency of repetitions at the beginning.

Susceptibility to Muller-Lyer Illusion—

by H. R. Crosland, H. R. Taylor and S. J. Newson.

This paper negatives the statement "that more intelligent persons are the more susceptible to the illusion." A long series of experiments in which 25 University Freshmen participated as subjects failed to establish any significant correlation between the rate of intelligence and the amount of error in judgment.

Variations in the values of correlations due to different modes of presentation of the figures and to the observer's method of adjusting the variables with the standard were noticed.

The Influence of Occupation upon the Perception of Time—

by Harold Gulliksen.

326 members from eight laboratory sections of the Washington University were tested. They were set to eight different types of activity ranging from 'complete rest' to occupations involving mental and muscular work. While thus engaged they were required to estimate subjectively definite intervals of time limited by signals given by the experimenter. The results suggest the possible influence of occupation on the estimation of time interval.

S. BOSE.

The following letter and the Questionnaire which we have received from the Secretary of the Indian Psycho-analytical Society are hereby circulated to the members of the Indian Psychological Association for their opinion :

Indian Psycho-Analytical Society,

14, PARSIBAGAN, CALCUTTA,

31st March, 1927.

DEAR SIR,

The question whether non-medical men should practise psycho-analysis came up for discussion at the sitting of the last International Psycho-analytical Congress at Homburg. No definite conclusion was arrived at by the Congress. Recently a circular letter has been addressed to the different branch societies of the Association asking for their opinion in this matter. This circular was placed before the meeting of the Indian Psycho-analytical Society held on the 20th March, 1927. A committee of four consisting of Drs. G. Bose, N. N. Sen Gupta, N. C. Mitra and S. C. Mitra was constituted to go into the matter and to submit a report at an early date. The committee is issuing this Questionnaire and will be greatly obliged if you will kindly fill it up and send it to the undersigned at your earliest convenience.

Certain unauthorised persons have brought discredit on psycho-analysis by posing as its exponent and practising it for therapeutic purposes. At present there is no means for a patient to ascertain the bona fides of such persons practising as psycho-analysts. Some sort of safeguard for the general

public seems to be necessary and it is desirable that a body like the Indian Psycho-analytical Society should have a definite opinion in the matter. Psycho-analysis is not a therapeutic measure that can be practised by any and every medical man. It is a technical subject requiring a thorough practical training in its principles as well as an analysis of the physician himself. There are certain dangers in the hands of untrained men as in any other branch of therapeutics. It is therefore necessary that certain minimum requirements should be fulfilled before a person can be allowed to practise psycho-analysis.

Psycho-analysis has numerous other fields of activity besides therapeutics, so it does not seem to be justifiable that it should be limited to medical men only because that would unduly check the progress of the science in other spheres of human interest. At the same time the dangers of psycho-analysis when practised by unqualified people should be clearly kept in mind. You will, therefore, give the Questionnaire your earnest consideration and send the reply to me at an early date.

Yours faithfully,

S. C. MITRA.

Questions.

1. What in your opinion should be the conditions fulfilled by a properly qualified medical man before he could take up psycho-analysis for therapeutic purposes.

Answers.

*Questions.**Answers.*

2. Do you approve of the idea of a non-medical man's practising psycho-analysis for—

(a) therapeutic purpose.

(b) other scientific aims.

If so, would you suggest—

(a) any restrictions regarding qualifications of such a person.

(b) Any other conditions.

(c) How do you propose to enforce these conditions.

If you do not approve of the practising of psycho-analysis by non-medical men please state reasons for your objection.

3. Do you think that any person, who is not a member of this society or some other society recognised by the International Psycho-analytical Association should practise psycho-analysis for therapeutic purpose.

4. What steps do you suggest to prevent undesirable persons from taking up psycho-analysis for therapeutic purpose.

The following communication has been addressed by the President of the Indian Psychological Association to the members :

DEAR SIR,

As you have become a member of the Indian Psychological Association, I presume that you will agree that there are many matters of public utility and importance which are, directly or indirectly, the concern of the Association. One of these is, I think you will admit, the instruction of our legislators in the necessity of a Mentally Defectives Act for India. As you are aware there is no legislation in India at present to deal effectively with mentally defective children except the Indian Lunacy Act of 1912 and for this purpose this Act is almost useless. In 1925 the Hon'ble Mr. Haroon Jaffer brought forward a motion in the Legislative Assembly to consider the necessity of a Mentally Defective Act but the matter was dropped after a half-hearted discussion. In these circumstances I venture to propose that the members of the Indian Psychological Association, especially those who are Alienists or at any rate interested in mental diseases should confide a petition to a member of the Legislative Assembly who is known to sympathise with this important piece of legislation.

I shall be glad to know your views on this matter and whether or not you approve of my suggestion.

Yours very truly,

OWEN BERKELEY HILL,

LIEUT. COL., I.M.S., PRESIDENT,

INDIAN PSYCHOLOGICAL ASSOCIATION.